THE

ONTARIO WATER RESOURCES

COMMISSION

WATER POLLUTION SURVEY

of the

CITY OF BARRIE

COUNTY OF SIMCOE

1966

REPORT

on a

Water Pollution Survey

of the

CITY OF BARRIE

County of Simcoe

December 1966

Division of Sanitary Engineering

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ONTARIO WATER RESOURCES COMMISSION

R E P O R T

INTRODUCTION

This report is concerned with the assessment of the general quality of water in the City of Barrie and more specifically the quality of the water of Kempenfeldt Bay and local inland watercourses. These surveys are made by the Ontario Water Resources Commission for the purposes of locating and recording sources of existing and potential water pollution. Where pollution sources are noted, recommendations concerning their abatement are made to the parties concerned.

The sample analyses results have been taken from various investigations made by the Commission. One of these was a survey by the Division of Industrial Wastes which was made in 1964 with subsequent follow-up investigations. The purpose of the survey was to determine the nature and quantity of industrial wastes discharging to the City's sewerage system and natural watercourses, and to advise on the need for effective pretreatment and control measures where these were needed. This is discussed later in the report. The appendices to this report include an interpretation of the laboratory analyses, a tabulation of storm sewer outfalls and analytical results, and a map of the city showing the sampling point locations.

The municipal officials of Barrie have demonstrated a keen awareness of the detrimental effects of water pollution. A specific example of this is the modern water pollution control plant which has

recently been completed.

GENERAL INFORMATION

Barrie is the only city in the County of Simcoe. It is situated at the west end of Kempenfeldt Bay at the junction of Highways 11, 27, and 90. According to the 1966 Municipal Directory, the assessed population is 24,010.

Drainage from the city reaches Kempenfeldt Bay directly by storm sewers or by tributaries flowing to that body of water. There are five streams which rise in the northern section of the city and meander generally southward to their discharge points at Kempenfeldt Bay. Improvements have been made in certain sections of these streams so that they assume the features of a municipal sewer. For the purposes of this report, these streams are designated as streams A, B, C, D, and E. Stream A is locally known as Tiffin Creek.

WATER USES

Municipal Water Works

Water for the city is obtained from five drilled wells. The total well pumping capacity and water storage of the system is 7.5 mgd and 2,693,500 gallons respectively. With the exception of one, all of the wells feed water to reservoirs. Six booster stations are provided to raise water to higher levels and to overcome friction losses in the long watermains. Chlorination and calgon treatment are provided at all wells to maintain iron in a soluble state and to prevent the occurrence of red water problems in the distribution system.

In 1965, a total of 322 bacteriological samples were obtained from the distribution system by the Simcoe County Health Unit and the municipality. Ninety-nine per cent of the samples were of satisfactory bacteriological quality.

Private and Industrial Water Supplies

The following industries use private wells as a source of water; Lakeview Dairy, Barrie Tanning, Robson Lang Leather Limited, Copaco, and Moldex Limited. These industries have connections to the municipal system but use negligible amounts of city water.

The Barrie Arena Commission operates a private well supply for use in the compressors at the arena.

Recreation

The YMCA and Lions Club swimming pools both use municipal water.

Kempenfeldt Bay is a major recreational area providing boating and swimming for the citizens of the city as well as tourists.

WATER POLLUTION

Water Pollution Control Plant

Sewage from domestic and industrial sources in the City of Barrie is discharged via a system of sanitary sewers and sewage pumping stations to the water pollution control plant. This is a conventional activated sludge plant which was newly expanded in 1965 to a capacity of 3.0 mgd. The plant effluent is discharged to Kempenfeldt Bay.

During 1965, the average sewage flow was approximately one third of the plant's design capacity giving a per capita sewage flow of approximately 50 gpd. The average strength of the raw sewage has been more than twice the average normal strength of sewage. Sludge bulking problems have been encountered apparently due to high organic and/or high toxic shock loads of industrial wastes. Despite these problems, average plant BOD and suspended solids removal efficiencies of 91 and 92 per cent respectively were being obtained.

Municipal Storm Sewers

As can be noted from the appended map, there are numerous storm sewer outfalls to the five streams flowing through the municipality and to Kempenfeldt Bay. In many cases no dry weather flow was noted or it was found to be insufficient for sampling. In some instances the outfalls were inaccessible.

Flows were noted and samples were collected from ten storm sewer discharges. With the exception of two relatively high coliform counts, these samples yielded results within the OWRC objectives for discharge to a watercourse, therefore, indicating that they were relatively free of polluting materials. However, there are a number of storm sewer outfalls which are of concern in relation to their discharge of sanitary or industrial wastes.

Sampling Point No.	Remarks
SC-0.19-W	Since this outfall was inaccessible, a sample of the discharge was not collected, but there was visual evidence of raw sewage in the stream on the east side of the street just downstream from the outfall. High BOD, solids, and coliform counts are noted in the sample collected from this point (SC-0.19) in November, 1965.
SC-0.76-W	Wastes from the J.B. Car Wash are discharged after settling to the storm sewer which discharges at this point; the outfall is inaccessible. A coliform count in excess of Commission objectives was noted in a sample collected on the east side of Anne Street just downstream from this outfall.
SCTB-0.57-W-2	Wastes from the coin operated car wash (Sof-spra) located in the Barrie Shopping Plaza are discharged to the storm sewer which has its outfall at this point. The sample taken on August 17, 1966 revealed satisfactory effluent quality; however, these wash-waters are discharged intermittently, and the sample results may not have been a true indication of the strength of the wastes.
SB-0.64-W	The storm sewer discharging at this point receives the wastes from several industries in the general area. These are mainly chemical wastes such as zinc, cyanide, chrome, and copper. They are discussed further under industrial wastes.
SE-1.04-W	Industrial wastes from Culligan Water Conditioners which exceed the OWRC objectives for discharge to a storm sewer are present in this discharge. The outfall is inaccessible.

Industrial Wastes

It is obvious that industrial wastes have been a major contributor to pollution in the city. The Industrial Wastes Division of the Commission, city officials, and the industries concerned have

done much work in a co-operative effort to bring about the necessary corrective measures to meet effluent quality objectives of the OWRC for industrial waste control; this work is continuing. However, there are still a number of industrial waste discharges, either direct or to storm sewers which are resulting in water impairment. Varying amounts of industrial wastes reach all of the small watercourses traversing the city, with the possible exception of stream D. Stream A has had a considerable history of industrial waste pollution. This is discussed under "Tuckers Minnow Ponds". The storm sewer discharging to stream B at sampling point SB-0.64-W is of particular concern since it contains considerable amounts of toxic chemicals from several industries. Another point where a strong industrial waste discharge exists is at sampling point number SB-0.41-I which is the outfall from the Lufkin Rule of Canada Plant. The aforementioned car washes are also contributing to the pollution of these watercourses.

Varying degrees of corrective measures are further required for the following industries having industrial wastes discharging directly to surface waters, and/or storm sewers.

Canadylet Closures,
Culligan Water Conditioners,
DeVilbiss (Canada) Limited,
C.V. Hill of Canada,
Imperial Eastman,
Lufkin Rule of Canada,
Dufferin Materials & Construction Limited,
Universal Cooler Limited.

Reports have been prepared and directed to these industries recommending that the necessary corrective action be taken to

eliminate any resulting water impairment problems.

An industrial waste by-law has recently been adopted by the city. This will further assist in controlling industrial waste discharges to the sanitary sewers, and in turn help to reduce operational problems at the water pollution control plant.

Refuse Disposal

The garbage disposal site is a 55 acre farm located near the western municipal boundary of this municipality. Five acres are presently in use. Incineration methods are to be used at this site in the near future. There is no watercourse in the immediate area of the dump, and consequently no water pollution problems are expected as a result of this operation.

An old landfill site is located in the north-west corner of Innisfil and Vespra streets. Apparently this site was abandoned about fifteen years ago. The type of material deposited is not known, however, small amounts of a reddish-coloured, foul-smelling leachate were noted flowing to stream C in at least four different areas. Efforts should be made to prevent the flow of this liquid to the stream.

Tucker's Minnow Ponds

The business of raising minnows for bait is carried on by Mr.K. Tucker at 140 Tiffin Street, Barrie. Stream A flows through Mr. Tucker's property, and ponds have been constructed so that by the use of piping, fresh water can be directed through them. Four industries, Dufferin Materials and Construction Limited, DeVilbiss

(Canada) Limited, Universal Cooler Company of Canada Limited, and Bob Garner Construction Limited are located upstream from Mr. Tucker's property.

A number of investigations of fish kills in these ponds have been carried out by Commission staff over the past few years. The actual cause of these kills has been somewhat difficult to determine since a continuing study of the discharges to the creek has revealed that no continuous industrial pollutants are reaching it. It was concluded that periodic uncontrollable dumping must have caused these kills.

The Industrial Wastes Division of the OWRC is presently keeping this problem under surveillance.

Waterfront Area

(a) General

Considerable recreational activity occurs in Kempenfeldt Bay at Barrie. Fishing, swimming and boating are all carried on in the lake adjacent to the city.

In the past few years the Barrie shoreline has been undergoing considerable change due to the reclaiming of land from the bay by filling operations. This method is being used to create the new centennial park located at the foot of Victoria Street. Trees, broken concrete, and other refuse are being used as fill material. Although "no garbage dumping" signs are posted, a small amount of organic material was noted in the fill area on August 16, 1966.

Areas such as this should be carefully supervised to prevent the unlawful deposit of garbage. The results of a sample collected from the bay in the general area did not indicate any adverse effects on water quality.

(b) Boating

Boating facilities along the Barrie waterfront include the City of Barrie Marina, Delaney Boat Lines and Service, E. Carley Boats, and the Barrie Yacht Club. In all, a great number of boats are docked in these four areas. The amount of sanitary wastes which may be discharged to the water of the bay from boats having toilet facilities is not known at the present time. Regulations concerning the control of the discharge of sewage from pleasure boats have been passed recently and will come into force in July 1968. The regulations specify approved types of devices which are to be used in the various watercraft. It is anticipated that as a result of the passing of these regulations, a network of dockside pumping and shore disposal systems will be established at regular docking areas to service the boats.

(c) Waterfront Survey

A brief survey of premises located along the waterfront was made to ascertain the extent of polluting materials, if any, which were being discharged to the bay. The following information was obtained:

Name of Premises	Comments
Sea Cadet Hall (RCSCC Barrie)	Reportedly, no sanitary facilities are used here.
Delaney Boat Lines and Speedy Bay Car Wash	Sanitary facilities connected to municipal sewer approximately three years ago. Wastes from the car washing area are discharged to a concrete settling tank and then to the bay via a partially submerged outfall. The results of the sample collected of this waste are in excess of the Commission objective for a discharge to a watercourse.
E. Carley Boats	The owner reported that this premises does not contain sanitary facilities.
Public Bathing Beach	Two washrooms serving this area utilize a septic tank and tile bed system. No operating difficulties reported.
Barrie Yacht Club	A septic tank and tile bed serves two washrooms and the kitchen in this premises. Dye testing of these facilities indicated that sewage was not gaining access to the bay.

(d) Water Quality

The appended results of samples collected from Kempenfeldt Bay by Commission staff indicate the waters to be well within the Commission objectives for BOD, solids, and coliforms. One slightly high coliform count was obtained in a sample collected at the foot of Poyntz Street in 1963.

The Simcoe County Health Unit collects bacteriological samples from the Bay on a regular basis. From a total of twenty-five samples collected in 1965, the average total coliform count was found to be 151; fifty-nine samples collected in 1966 revealed an average

coliform count of 973. With the exception of one high total coliform count of 46,000 in a sample taken from a point designated as left end of Johnston Beach, the counts do not exceed the OWRC objective for surface waters. Although the quality of the water in the streams discharging to the Kempenfeldt Bay is generally poor, samples collected from the bay have been mostly satisfactory, due to the large dilution factor involved.

GENERAL DISCUSSION OF LABORATORY RESULTS

The results of samples of industrial wastes which are discharged to storm sewers or directly to surface waters are tabulated in Table VII. Many of these contain an obviously high content of toxic materials and are very significant sources of pollution of the small waterways flowing to Kempenfeldt Bay.

Increasing coliform counts can be noted in each stream as it flows from its source and receives polluting materials along the way to its discharge point at the bay. An obvious sanitary waste discharge is the aforementioned storm sewer outfall at sampling point number SC-0.19-W. However, as indicated by the very high coliform count in the downstream sections of each stream, there are undoubtedly more discharges of this nature. It would appear that the majority of these are in the concentrated or downtown area of the city where the watercourses have been covered. The coliform counts tend to increase significantly at these points. The overall polluting effects on the streams can be seen by the results of samples at the mouth of

each stream.

SA-0.00 Coliform counts of 9,000, 16,000, and 72,000 per 100 ml were obtained at the discharge point of stream A. The sample collected in 1965 indicated a BOD of 23 ppm.

SB-0.00 At the discharge point of stream B, BOD values of 15.0 and 7.2 ppm were obtained, as well as a coliform count of 3,200 on November 1, 1965.

SC-0.00 Coliform counts of 50,000 and 460,000 were noted at the stream C outlet.

SD-0.00 At the outlet of stream D, a BOD of 12 ppm and a coliform count of 910,000 were obtained in samples collected on August 16, 1966.

SE-0.00 The bacteriological sample collected at the outlet of stream E revealed a coliform count of 143,000.

SUMMARY

This is a report on a water pollution survey of the City of Barrie. Water quality surveys were carried out on Kempenfeldt Bay and the inland watercourses flowing through the municipality. The Division of Industrial Wastes of the OWRC carried out a survey during 1964 and is continuing with follow-up investigations. Varying degrees of corrective measures are required at certain industries to overcome the significant contribution of industrial wastes to water pollution within the municipality. Certain problems due to industrial wastes are also being encountered at the water pollution control plant.

Measures are being taken to provide for effective control of these discharges.

Storm sewers discharging industrial and/or sanitary wastes account for much of the pollution within the city. It would appear that a considerable amount of sanitary wastes is gaining access to the streams in the concentrated area of the city where they are not readily apparent.

The present refuse disposal site does not appear to be presenting any problem with respect to water pollution, but leachate from an old landfill site located at Innisfil and Vespra streets is gaining access to the stream at this point.

Generally satisfactory conditions were noted along the water-front area in relation to the waste disposal facilities serving premises located near the water. One exception is the Speedy Bay Car Wash which discharges car wash wastes to the bay.

The city has pursued an active programme to abate water pollution; much work still remains to be done especially in relation to the discharge of industrial and sanitary wastes either directly or via storm sewers.

RECOMMENDATIONS

1. The municipality should endeavour to locate and sever all connections to storm sewers where polluting materials are being discharged.

2. The eight industries, namely Canadylet Closures, Culligan Water Conditioners, DeVilbiss (Canada) Limited, C.V. Hill of Canada, Imperial Eastman, Lufkin Rule of Canada, Dufferin Materials and Construction Limited, and Universal Cooler Limited should take the necessary corrective action to eliminate the discharge of any inadequately treated industrial wastes to the watercourses or storm sewers, as recommended by the Division of Industrial Wastes of the OWRC.

3. The industries discharging industrial wastes to the sanitary sewers should be prepared to meet the waste discharge objectives of the industrial waste by-law.

4. Wastes from the three car washes i.e., the J.B. Car Wash, the Speedy Bay Car Wash, and the "Sof-Spra" Car Wash should be discharged to the municipal sanitary sewer system.

5. Measures should be taken at the old landfill site at Innisfil and Vespra streets to prevent leachate from entering the stream.

Approved by

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Prepared by: M.M. Holy and
C.L. Young,
Engineering Technicians.

APPENDIX

SIGNIFICANCE OF LABORATORY ANALYSES

Bacteriological Examination

The membrane filter technique is employed to obtain a direct enumeration of coliform organisms and is reported per 100 millilitres. The presence of coliforms indicates pollution from human or animal excrement, or from some non-fecal forms. A membrane filter coliform count in excess of the desirable upper limit of 2,400 organisms is considered to render waters undesirable for bathing purposes.

The M.P.N. Index reported by Regional Health Laboratories on drinking water supplies as the "Most Probable Number" (M.P.N.) per 100 millilitres of sample is employed to determine the count of coliform bacteria present in water supplies.

Chemical Analyses

Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm), and is an indication of the amount of oxygen required for the stabilization of decomposable organic matter in the water. The completion of the laboratory test requires five days, under the controlled incubation temperature of 20^{o} Centigrade.

The Commission objective for surface-water quality is an upper limit of four (4) ppm.

Solids

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analyses in regard to surface-water quality.

Physical Determinations

Dissolved Oxygen

The amount of dissolved oxygen contained in unpolluted water fluctuates with the temperature. A deficiency of oxygen is replaced by solution of oxygen from the atmosphere. There is a saturation value for each temperature. At 18°C this is 9.54 ppm of dissolved oxygen. Values below the saturation level indicate the presence of polluting organic substances which are absorbing oxygen from the water. The extent of this deficiency is one index of the degree of organic pollution. Substantial reduction in dissolved oxygen causes suffocation of fish.

Temperature

The temperature of water influences the solubility of oxygen and the rate of oxidation and purification.

CITY OF BARRIE

RECOMMENDED MAXIMUM LIMITS FOR DISCHARGE OF INDUSTRIAL WASTES TO PUBLIC STORM SEWERS OR NATURAL WATERCOURSES

	Storm Sewer or Natural Watercourse
Suspended Solids	15 ppm
BOD	15 ppm
pH	5.5 to 9.5
Ether Solubles (a) Animal Origin (b) Mineral Origin	15 ppm of ether solubles
Chromium as Cr (Hexa.)	1 ppm
Cyanide as HCN	0.1 ppm
Copper as Cu	3 ppm
Zinc as Zn	15 ppm
Iron as Fe	17 ppm
Silver as Ag	1 ppm
Cadmium as Cd	1 ppm

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS

KEMPENFELDT BAY

* All analyses except pH reported in ppm unless otherwise indicated

TABLE I

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
LS-1	Kempenfeldt Bay south of foot of Bayview Drive..	Jul.29/63	1.7	198	4	194			>150	
		Jul.12/65	0.7	160	3	157			52	
KB-1 W	36-inch concrete storm sewer north west of the foot of Bayview Drive.	Oct.29/65	Not Located							
		Nov. 5/65	Not Located							
		Aug.16/66	1.2	398	6	392			16,100	5 gpm
KB-2 W	24-inch concrete storm sewer just north of the CNR Station.	Aug.16/66	1.2	382	2	380			73,000	8 gpm
LS-2	Kempenfeldt Bay opposite the foot of Tiffin Street.	Jul.29/63	-	-	-	-			232	
		Jul.12/65	-	-	-	-			58	
		Aug.18/66	-	-	-	-			130	
KB-3 T	Barrie Pollution Control Plant final effluent to 30-inch outfall 470 feet into Bay.	Oct.26/65	8.4	1146	25	1121			0	
		Aug.16/66	23.0	1138	30	1108			>4	

TABLE I (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	Susp.	Diss.	Oxygen Saturation Temp. °C	Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
LS-3	Kempenfeldt Bay opposite the Barrie Pollution Control Plant.	Aug.18/66	-	-	-	-			370	
KB-4 D	36-inch diameter outlet of stream draining marshy area north of the Barrie Pollution Control Plant.	Oct.26/65	1.3	318	1	317			330	10 gpm
		Nov. 1/65	1.5	370	1	369	6°	9	46	15 gpm
		Aug.18/66	No Flow Noted							
KB-5 I	18-inch pipe-Robson Lang Leathers.	Nov. 1/65	No Flow Noted							
		Aug.18/66	No Flow Noted							
KB-5 I-2	4-inch P.V.C. pipe to culvert and Bay-Robson Lang Leathers.	Nov. 1/65	Flow Insufficient For Sampling							
		Aug.18/66	0.3	280	1	279			240	1 gpm
KB-5 I-3	3-inch copper pipe-Robson Lang Leathers.	Aug.18/66	No Flow Noted							
KB-6 I	Speedy Bay Car Wash settling tank.	Aug.18/66	16.0	324	46	278			110,000	

TABLE I (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
KB-6 I-2	8-inch concrete pipe-effluent from car wash settling tank to Bay-submerged effluent pipe therefore receiving water sample only.	Oct.29/65	Flow Noted - Partially Submerged							
		Nov. 5/65	16.0	448	202	246			6,500	10 gpm
		Aug.18/66	64.0	452	218	234			330,000	
KB-6 I-3	6-inch galvanized overflow to Bay from car wash settling tank.	Aug.18/66	No Flow Noted							
KB-7 W	18-inch concrete storm sewer-just south of foot of Bayfield Street.	Oct.29/65	No Flow Noted - Scum and Refuse in Area							
		Nov. 5/65	No Flow Noted - Scum and Refuse in Area							
		Aug.18/66	No Flow Noted - Scum and Refuse in Area							
LS-4	Kempenfeldt Bay-foot of Government wharf.	Aug.18/66	-	-	-	-			44	
KB-8 W	60-inch concrete storm sewer just north of the foot of Bayfield Street.	Oct.29/65	Partially Submerged - No Apparent Flow							Receives Flow-Stream E
		Nov. 5/65	Partially Submerged - No Apparent Flow							E.of Bayfield
		Aug.18/66	2.3	188	1	187			9,100	Greenish discolouration

TABLE I (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
KB-9 W	36-inch galvanized iron storm sewer just north of the foot of Mulcaster Street.	Aug. 18/66	Partially Submerged - No Apparent Flow							
KB-10 W	36-inch galvanized iron storm sewer just north of the foot of Mulcaster Street.	Aug. 18/66	Partially Submerged - No Apparent Flow							
LS-5	Kempenfeldt Bay foot of Poyntz Street.	Jul. 29/63	-	-	-	-			3,600	
		Jul. 12/65	-	-	-	-			18	
		Aug. 18/66	-	-	-	-			520	
KB-11 W	26 x 20-inch concrete box storm sewer west of the foot of St.Vincent Street.	Oct. 29/65	Flow Insufficient For Sampling							
		Nov. 5/65	Flow Insufficient For Sampling							
		Aug. 18/66	Flow Insufficient For Sampling							
KB-12 W	10-inch diameter metal storm sewer west of the foot of Rodney Street.	Oct. 29/65	Flow Insufficient For Sampling							
		Nov. 5/65	Flow Insufficient For Sampling							
		Aug. 18/66	Flow Insufficient For Sampling							

TABLE I (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
KB-13 W	36-inch diameter metal storm sewer at foot of Rodney Street.	Oct.29/65	Flow Noted							4 gpm
		Nov. 5/65	0.9	455	1	454			10	3 gpm
		Aug.18/66	-	-	-	-			300	3 gpm
KB-14 W	18-inch diameter metal storm sewer foot of Cook Street.	Oct.29/65	Flow Noted							1 gpm
		Nov. 5/65	0.8	890	2	888			600	3 gpm
		Aug.18/66	No Flow Noted							
KB-15 W	15-inch diameter metal storm sewer east of the foot of Vancouver St.	Oct.29/65	Flow Insufficient For Sampling							
		Nov. 5/65	Flow Insufficient For Sampling							
		Aug.18/66	No Flow Noted							
KB-16 W	48-inch diameter metal storm sewer foot of Puget St.	Oct.29/65	Flow Insufficient For Sampling							
		Nov. 5/65	Flow Insufficient For Sampling							
		Aug.18/66	Flow Insufficient For Sampling							
KB-17 W	18-inch metal storm sewer west of foot of Johnson Street.	Oct.29/65	Not Located							
		Aug.18/66	No Flow Noted							
LS-6	Kempenfeldt Bay at foot of Johnson St.	Jul.29/63	-	-	-	-			10	
		Jul.12/65	-	-	-	-			2	
		Aug.18/66	-	-	-	-			250	

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS - STREAM A

TABLE II

All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SA-0.00	Stream A and 48-inch diameter twin outlets to Kempenfeldt Bay.	Oct.26/65	3.8	430	4	426	8	9	9,000	100 gpm
		Oct.27/65	23.0	448	20	428	9	9	16,000	125 gpm
		Aug.16/66	2.8	470	9	461	18	7.5	72,000	
SA-0.09 W	12-inch diameter storm sewer-east of Bradford St.	Oct.27/65	Flow Insufficient For Sampling							
		Aug.16/66	Flow Insufficient For Sampling							
SA-0.19 P	4-inch diameter cast iron outlet-Dangerfield Motors.	Oct.27/65	No Flow Noted (Evid.of Prev.Discharge of Paint Wastes)							
		Aug.16/66	No Flow Noted							
SA-0.19 P-2	12-inch diameter outlet-Dangerfield Motors.	Oct.27/66	Flow Insufficient For Sampling (Evid.of Prev.Disch-Oily Wastes)							
		Aug.16/66	No Flow Noted							
SA-0.37	Stream A-east of Innisfil Street.	Oct.27/65	17.0	462	64	398			600	
SA-0.37 W	Storm sewer-Innisfil Street.	Oct.27/65	Under Road Inaccesible							0.5 gpm

TABLE II (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Desctiption	Date Examined or Sampled	5-Day BOD	SOLIDS Total	Susp.	Diss.	Oxygen Saturation Temp. °C	Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SA-0.37 W-2	Storm sewer - Innisfil Street.	Oct.27/65	Under Road Inaccessible							1 gpm
SA-0.39 W	6-inch diameter storm sewer east of Ray's Simcoe Motors Limited.	Oct.27/65	Inaccessible							0.5 gpm
SA-0.57	Stream A east of Anne Street.	Oct.27/65	5.2	556	74	482			13,000	
SA-0.57 W	Storm sewer - Anne Street.	Oct.27/65	Under Road Inaccessible							
SA-0.74	Stream A-north of Tiffin Street and upstream from Tucker's.	Oct.27/65 Aug.16/66	8.0 2.0	552 368	50 14	482 354	7	11	4,800 420	
SA-0.74 W	Storm sewer - Tiffin Street.	Oct.27/65	Under Road Inaccessible							
SA-0.75	Stream A-south of Tiffin Street.	Oct.27/65	4.4	428	30	398			2,500	
SA-0.76	Stream A-south of CNR tracks.	Oct.27/65	4.2	402	5	397			2,700	

TABLE II (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. 0^{o}	Oxygen Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SA-0.76 W	24-inch diameter storm sewer west of Alfred Street.	Oct.27/65	Outlet Partially Obstructed							
SA-0.85	Stream A-north of Wood Street.	Oct.27/65	2.1	400	10	390			570	
SA-0.85 I	DeVilbiss outlet to culvert-Wood Street.	Oct.27/65	Inaccessible							
SA-0.86 W	Storm sewer to culvert-Wood St.	Oct.27/65	Inaccessible							
SA-0.86 R	Sewage pumping station relief sewer south of Wood Street	Oct.27/65 Aug.16/66	No Flow Noted No Flow Noted							
SA-0.95	Stream A-foot of Campbell Ave.	Oct.27/65	2.4	390	14	376			900	

				pH	Chrome	Zinc	Nickel	Cyanide		
SA-1.13	Stream A-west of Hwy. No.400	Oct.27/65	1.9	7.7	0.04	0.0	0.0	0.0	790	

TABLE II (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SA-1.13 I	Ditch from Universal Cooler-west of Hwy. No.400.	Oct.27/65	No Flow to Stream							
		Aug.16/66	No Flow to Stream							
SA-1.50	Stream A-south of Patterson Road.	Aug.16/66	1.8	366	6	360			36,000	Homes in area.

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS - STREAM B

TABLE III

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SB-0.00	Stream B at 36-inch diameter outlet to Kempenfeldt Bay.	Nov. 1/65 Aug.16/66	15.0 7.2	748 562	29 40	719 522	11 24	8 4	3,200 200	
SB-0.26	Stream B-west of Bradford Street.	Nov. 1/65 Aug.16/66	13.0 13.0	582 224	31 32	551 192			4,600 9,000	Oil
SB-0.40 W	12-inch diameter storm sewer-east of Innisfil St.	Nov. 5/65 Aug.16/66	No Flow Noted No Flow Noted							
SB-0.40 P	6-inch diameter asbestos outlet-east of Innisfil Street.	Nov. 5/65 Aug.16/66	No Flow Noted No Flow Noted							
							Cyanide	Iron		
SB-0.41 I	12-inch diameter concrete outlet-Lufkin Rule of Canada-west of Innisfil Street.	Nov. 5/65 Aug.16/66	40.0 14.0	364 460	27 48	337 412	0	9.6	0	8 gpm 5 gpm

TABLE III (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	pH at Lab	CHROMIUM AS CR Total	CHROMIUM AS CR Hexavalent	Zinc as Zn	Nickel as Ni	Copper as Cu	Cyanide as HCN	Iron as Fe
SB-0.41 I	12-inch diameter concrete outlet-Lufkin Rule of Canada-west of Innisfil Street.	Aug.16/66	7.3	30	26	6.9	5.5	4.4	1.7	18.5

			5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Cyanide as HCN	Ether Solubles	MF Coliform Count per 100 ml	Remarks
SB-0.64	Stream B east of Anne Street below industrial waste outfall from John St.	Nov. 1/65	3.0	802	9	703	0	1.6	900	Oil
		Aug.16/66	1.4	378	4	374	1.1	-	160	(Industrial waste odour)
SB-0.64 W	Storm sewer receives Industrial Wastes from area to the west on John Street.	Nov. 1/65	Under Road		Inaccessible					Heavy Flow
		Aug.16/66	Under Road		Inaccessible					Warm
SB-0.79	Stream B south of Victoria St.	Nov. 1/65	4.0	402	1	401			1,260	10 gpm
		Aug.16/66	0.5	256	1	255			410	4 gpm

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS - STREAM C

TABLE IV

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SC-0.00	Stream C at 48-inch diameter outlet to Kempenfeldt Bay.	Nov. 1/65	8.0	360	14	346	6	6	460,000	
		Aug.16/66	3.6	394	1	393	18	4	50,000	
SC-0.19	Stream C-east of Bradford Street.	Nov. 1/65	23.0	546	212	334			600,000	Raw Sewage
		Aug.17/66	3.4	390	9	381			20,000	Raw Sewage
SC-0.19 W	Storm sewer-at Bradford St.W.	Nov. 1/65	Under Road Inaccessible							Flowing
		Aug.17/66	Under Road Inaccessible							Flowing
SC-0.20	Stream C-west of Bradford St.	Nov. 1/65	40.0	474	150	324			90,000	
		Aug.17/66	2.0	374	9	365			1,170	
SC-0.20 W	12-inch diameter sewer west of Bradford St.north side of stream.	Nov. 1/65	14.0	320	204	116			6,700	8 gpm
		Aug.17/66	Flow Insufficient For Sampling							
SC-0.20 P	8-inch diameter outlet-west of Bradford Street south side of stream.	Nov. 1/65	Submerged No Apparent Flow							
		Aug.17/66	Not Located							

TABLE IV (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SC-0.21 P	8-inch diameter outlet-west of Bradford Street south side of stream.	Nov. 1/65	Submerged No Apparent Flow							
		Aug.17/66	Not Located							
SC-0.22 I	12-inch galvanized iron outlet-beside General Electric and east of the foot bridge.	Nov. 1/65	Flow Insufficient For Sampling							
		Aug.17/66	Flow Insufficient For Sampling							
SC-0.22 I-2	10-inch galvanized iron outlet-beside General Electric and east of the foot bridge.	Nov. 1/65	Flow Insufficient For Sampling							
		Aug.17/66	Flow Insufficient For Sampling							
SC-0.23 I	Wooden box outlet beside General Electric and east of the foot bridge.	Nov. 1/65	Submerged							Wood & Oil
		Aug.17/66	Submerged							Greenish
SC-0.23 D	Drainage area beside oil storage area for General Electric-west of the foot bridge.	Nov. 1/65	Bunker "C" Oil to Stream							
		Aug.17/66	No Drainage Noted							

TABLE IV (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	Susp.	Diss.	Oxygen Saturation Temp. °C	Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SC-0.24 I	Wooden box outlet beside General Electric and west of the foot bridge.	Nov. 1/65	Submerged							Hot
		Aug.17/66	Submerged							
SC-0.26 W	Wooden box outlet beside General Electric and west of the foot bridge.	Nov. 1/65	3.8	254	6	248			100	
		Aug.17/66	Observed							
SC-0.27	Stream C east of Innisfil Street.	Nov. 1/65	4.0	368	25	343			5,200	
		Aug.17/66	1.1	422	5	417			16,000	
SC-0.27 W	Storm sewer on Innisfil Street west of Vespra St.	Nov. 1/65	Under Road Inaccessible							Appears to carry Trib. A to Stream C
		Aug.17/66	Under Road Inaccessible							
SCTA-0.30 R	Tributary A of stream C west of Perry St.	Nov. 1/65	4.4	380	25	355			2,100	
SCTA-0.30 R	Sewage pumping station relief sewer-south of Perry Street.	Nov. 1/65	No Flow Noted							
		Aug.17/66	No Flow Noted							

TABLE IV (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	Susp.	Diss.	Oxygen Saturation Temp. °C	Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SCTA-0.83	Tributaty A of stream C just below plaza.	Nov. 2/65	1.2	294	1	293			290	Fish
		Aug.17/66	0.5	316	5	311			520	
SCTA-0.95	Tributary A of stream C just above plaza.	Nov. 2/65	1.7	260	1	259			220	
		Aug.17/66	0.7	286	1	285			500	
SC-0.28	Stream C west of Innisfil Street.	Nov. 1/65	2.0	374	5	369			200	
		Aug.17/66	1.2	412	5	407			870	
SCTB-0.57	Tributary B of stream C north of Perry Street and east of Boys Street-following storm sewers.	Nov. 1/65	2.8	236	20	216			1,800	Discharge
SCTB-0.57 W	18-inch diameter concrete storm outlet immediately north of Perry Street draining east to stream.	Nov. 1/65	Flow Insufficient For Sampling							Intermittent watercourse dischage.
		Aug.17/66	-	-	-	-			230	2 gpm

TABLE IV (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SCTB-0.57 W-2	24-inch diameter concrete storm sewer south of Dunlop Street draining east to stream.	Nov. 1/65	Flow Noted							5 gpm
		Aug.17/66	0.5	506	1	505			1,110	15 gpm receiving car wash wastes.
SCTB-0.73	Intermittent water-course to tributary B of stream C just north of Dunlop St.	Nov. 2/65	1.2	688	35	653			570	2 gpm
		Aug.17/66	Flow Insufficient For Sampling							
SC-0.57 W	18-inch diameter concrete storm sewer-north of Vespra Street on Boys Street (unimproved).	Nov. 1/65	12.0	608	190	418			4,300	25 gpm clear
		Aug.17/66	0.6	810	2	808			80	rusty
SC-0.57	Stream C just west of Boys Street (unimproved).	Nov. 1/65	2.4	170	10	160			3,700	

TABLE IV (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SC-0.74	Stream C just east of Anne Street.	Nov. 1/65	3.0	356	21	335			3,600	
SC-0.76 W	Storm sewer outlet Anne Street at Perry Street (unimproved).	Nov. 1/65	Under Road		Inaccessible					Car Wash discharge
		Aug.17/66	Under Road		Inaccessible					No app't flow. Not operating
SC-0.79	Stream C just west of Anne Street.	Nov. 1/65	2.0	372	20	352			1,900	
		Aug.17/66	0.9	336	1	335			1,140	

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS - STREAM D

TABLE V

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SD-0.00	Stream D at 48-inch diameter outlet to Kempenfeldt Bay.	Nov. 2/65	1.4	420	2	418	40	13	3,400	
		Aug.16/66	12.0	472	123	349	15	8	910,000	
SB-0.03 W	26-inch diameter concrete storm sewer east of CN tracks.	Nov. 2/65	Partially Submerged Flow Noted							Oil
		Aug.17/66	Partially Submerged Flow Noted							Oil
SD-0.38	Stream D-west of Dunlop Street.	Nov. 2/65	1.9	324	2	322			3,800	
		Aug.17/66	1.0	416	4	412			34,000	
SD-0.38 P	8-inch diameter clay outlet-west of Dunlop St.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.38 W	16-inch diameter concrete storm sewer-west of Dunlop Street.	Nov. 2/65	No Flow Noted							
		Aug.17/66	1.6	480	1	479			20	2 gpm

TABLE V (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SD-0.38 P-2	6-inch diameter clay outlet west of Dunlop Street.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.38 P-3	2-inch diameter iron outlet west of Dunlop Street.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.56 W	18-inch diameter concrete storm sewer-Donald St. west of Eccles St.	Aug.17/66	No Flow Noted							
SD-0.56	Stream D north of Donald Street.	Nov. 2/65	0.5	130	1	129			3,900	
		Aug.17/66	0.6	396	4	392			1,280	
SD-0.64 W	12-inch diameter concrete storm sewer-Eccles St. at Sophia Street.	Nov. 2/65	Under Road Inaccessible							
SD-0.64 W-2	12-inch diameter concrete storm sewer-Eccles St. at Sophia St.	Nov. 2/65	Partially Submerged							
		Aug.17/66	Partially Submerged							

TABLE V (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	Susp.	Diss.	Oxygen Saturation Temp. °C	Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SD-0.76 W	12-inch diameter clay storm sewer-south-west corner of Ross St. and Wellington St.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.76 W-2	18-inch diameter concrete storm sewer-north-west of corner of Ross and Wellington sts.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.76 W-3	12-inch diameter clay storm sewer-north-west corner of Ross and Wellington sts.	Nov. 2/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SD-0.76	Stream D-north of the intersection of Wellington and Ross sts.	Nov. 2/65	0.9	352	2	350			116	
		Aug.17/66	0.6	348	4	344			960	

CITY OF BARRIE

OUTFALL TABULATION AND ANALYTICAL RESULTS - STREAM E

TABLE VI

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SE-0.00	Stream E at outlet to Kempenfeldt Bay.	Nov. 2/65	Partially Submerged							
		Aug.16/66	3.2	302	5	297	17.5	4.5	143,000	
SE-0.28 W	12-inch diameter clay storm sewer-Park Street west of Toronto St.	Nov. 5/65	Under Road Inaccessible No Flow							
		Aug.17/66	Under Road Inaccessible No Flow							
SE-0.28	Stream E just north of Park St.	Nov. 5/65	7.8	648	5	643	5	10	110,000	
SE-0.42	Stream E just west of Toronto Street at culvert discharge.	Nov. 5/65	8.0	526	13	588			1,070,000	
		Aug.17/66	49.0	608	20	388			3,000	Variable Flow
SE-0.42 W	16-inch diameter concrete storm sewer discharging inside the large culvert along Ross Street West.	Nov. 5/65	Not Located							
		Aug.17/66	Observed							Up to 10 gpm

TABLE VI (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SE-0.42 W-2	16-inch diameter concrete storm sewer discharging inside the large culvert along Ross Street West at Toronto St.	Nov. 5/65 Aug.17/66	Not Located Observed							3 gpm
SE-0.66 P	6-inch diameter clay outlet via Bayfield Street north of Wellington St.W.	Nov. 5/65 Aug.17/66	Discharge to Manhole							5 gpm Corrected
SE-0.93 W	Storm sewer on Peel Street north of Sophia St.E.	Nov. 5/65	Under Road to Culvert Inaccessible							
SE-0.95	Stream E just east of intersection of Peel and Sophia streets.	Nov. 5/65 Aug.17/66	2.6 No Flow Noted	1400	23	1377			790	
SE-0.95 W	18-inch diameter concrete storm sewer just west of Mulcaster St. (unimproved).	Nov. 5/65 Aug.17/66	No Flow Noted No Flow Noted							

TABLE VI (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SE-0.95 W-2	10-inch diameter galvanized iron storm sewer on Mulcaster St. (unimproved).	Nov. 5/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SE-1.04	Stream E just west of Berczy Street.	Nov. 5/65	1.7	438	9	429			850	
		Aug.17/66	Flow Insufficient For Sampling							
SE-1.04 W	24-inch diameter concrete storm sewer south-west of intersection of Berczy and Queen streets.	Nov. 5/65	Under Road Inaccessible							8 gpm
		Aug.17/66	Under Road Inaccessible						(Discharge from Culligan Water Conditioners)	
SE-1.04 W-2	Storm sewer discharging to culvert at Queen Street just east of Berczy Street.	Nov. 5/65	Inaccessible No Apparent Flow							
		Aug.17/66	Inaccessible No Apparent Flow							
SE-1.11 W	Storm sewer discharging to culvert at Wellington St.E., just east of Berczy Street.	Nov. 5/65	Inaccessible No Apparent Flow							
		Aug.17/66	Inaccessible No Apparent Flow							

TABLE VI (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SE-1.23 W	24-inch diameter concrete storm sewer on Gunn Street just off Davidson Street.	Nov. 5/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SE-1.23 W-2	Storm sewer just south of intersections of Gunn and Davidson St.	Nov. 5/65	Under Road Inaccessible							No Flow
		Aug.17/66	Flow Insufficient For Sampling							
SE-1.47 W	Storm sewer just west of intersection of Grove Street East and Bothwell Cresc.	Nov. 5/65	Under Road Inaccessible				No Apparent Flow			
		Aug.17/66	Under Road Inaccessible				No Apparent Flow			
SE-1.47 W-2	18-inch diameter concrete storm sewer on Bothwell Crescent just north of Grove St.E.	Nov. 5/65	No Flow Noted							
		Aug.17/66	No Flow Noted							
SE-1.08 W	18-inch diameter concrete storm sewer on St.Vincent St.just north of Grove St.E.	Nov. 5/65	No Flow Noted							
		Aug.17/66	No Flow Noted							

TABLE VI (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

Sampling Point No.	Location & Description	Date Examined or Sampled	5-Day BOD	SOLIDS Total	SOLIDS Susp.	SOLIDS Diss.	Oxygen Saturation Temp. °C	Oxygen Saturation Diss. Oxygen	MF Coliform Count per 100 ml	Remarks
SE-2.27 W	Storm sewer on Duckworth St. just south of Willowdale Ave.	Nov. 5/65	Under Road Inaccessible						No Apparent Flow	
		Aug.17/66	Under Road Inaccessible						No Apparent Flow	

CITY OF BARRIE

ANALYTICAL RESULTS OF INDUSTRIAL WASTES

DISCHARGING TO STORM SEWERS AND/OR SURFACE WATERS

(FROM REPORTS BY THE DIVISION OF INDUSTRIAL WASTES)

TABLE VII

* All analyses except pH reported in ppm unless otherwise indicated

DESCRIPTION	DATE	SOLIDS TOTAL	SUSP.	DISS.	pH AT LAB.	ZINC AS ZN	CHROME TOTAL	CHROME HEX.	CYANIDE AS HCN	IRON AS FE	TIN AS SN	SILVER AS AG	NICKEL AS Ni	COPPER
CANDYLET CLOSURES														
PLATING ROOM EFF. (COMPOSITE)	JUL.15/64	1172	10	1162	2.3	6.6	2.4	1.8	13	2.9	1.0	1.0	0	-
CREEK-MORNING (COMPOSITE)	JUL.15/64	360	7	353	6.8	1.8	0.0	0.0	0.8	1.18	<0.5	0	-	-
CREEK-AFTERNOON (COMPOSITE)	JUL.15/64	506	9	497	6.6	2.5	0.0	0.0	1.2	1.20	<0.5	0	-	-
STREAM A ENTERING SUMP	JUNE 10/65	964	10	954	2.3	-	0.0	0.0	2.1	-	-	-	0.0	50
STREAM B ENTERING SUMP	JUNE 10/65	462	41	421	7.9	0.2	0.0	0.0	0.0	49	-	-	0.0	42

TABLE VII (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

DESCRIPTION	DATE	SOLIDS TOTAL	SUSP.	DISS.	IRON AS FE	CALCIUM AS CA	pH AT LAB.	MAGNESIUM AS MG	CHLORIDE AS CL
CULLIGAN WATER CONDITIONERS									
COMPOSITE OF PLANT EFFLUENT	JUNE 16/64	2878	9	2863	1.36	131	7.9	51	1290
GRAB SAMPLE OF BACKWASH	JUNE 16/64	1676	88	1588	26.8	76	8.1	19	660

DESCRIPTION	DATE	pH AT LAB.	CYANIDE AS HCN	NICKEL AS NI	ZINC AS ZN	CADMIUM	SULPHATE AS SO_4
DEVILBISS (CANADA) LIMITED							
RINSE TANK EFF. (GRAB)	AUG.27/64	8.2	0.0	14.8	0.0	-	-
PLATING ROOM WASTES	JUNE 10/65	-	0	0.2	-	0.0	-
COLD RUNNING RINSE IN PLATING PROCESS (2 HOUR COMPOSITE)	JUNE 7/66	8.2	1.1	1.6	-	0.6	4
CREEK 100 FEET DOWN-STREAM FROM STORM SEWER.	JUNE 7/66	8.3	0	0	-	0	17.0

TABLE VII (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

DESCRIPTION	DATE	5-DAY BOD	SOLIDS TOTAL	SOLIDS SUSP.	SOLIDS DISS.	PH AT LAB
C.V. HILL OF CANADA						
PAINT BOOTH EFFLUENT (GRAB SAMPLE)	AUG./64	350	772	172	600	7.4

		SOLIDS			PH	ZINC	CHROMIUM		CYANIDE	IRON
		TOTAL	SUSP.	DISS.	AT LAB.	AS ZN	TOTAL	HEX.	AS HCN	AS FE
IMPERIAL EASTMAN										
FINAL PLANT EFF. (COMPOSITE)	AUG./64	340	20	320	7.6	0.2	0.3	0.0	7.8	7.8
TOTAL PLANT EFF. TO STORM SEWER	JUNE 28/66	484	38	446	7.5	10.4	6.7	-	9.1	4.4

		COPPER AS CU	NICKEL AS NI	5-DAY BOD
LUFKIN RULE OF CANADA				
FINAL PLANT EFF. (2-HR. COMPOSITE)	AUG. 27/64	1.16	6.1	
(GRAB SAMPLE)	JUNE 11/65	1.6	6.6	
UNIVERSAL COOLER LIMITED				
STORM DITCH	MAY 26/66	-	-	2.4

TABLE VII (CONTD)

* All analyses except pH reported in ppm unless otherwise indicated

DESCRIPTION	DATE	PHOSPHATES AS PO_4
UNIVERSAL COOLER LIMITED		
STORM DITCH	MAY 26/66	1.76

* ALL ANALYSES EXCEPT PH REPORTED IN PPM UNLESS OTHERWISE INDICATED.